plify specific microsatellite markers, to amplify more than one microsatellite marker in one reaction. This reduced the number of amplification reactions and sequencing gels from five to two. BML designed an additional primer for a DNA gene, developed by Dr. Phil Hedrick, found to have distinguishing capabilities in chinook (Banks 1998).

Also through the Spring Chinook Genetics Project, BML performed genetic characterization of chinook captured in two experimental ocean fisheries conducted in 1997. They focused on identification of Central Valley spring- and winter-run chinook in the experimental ocean fisheries composed of stocks from southern Oregon and California. BML performed a MSA on allozyme data acquired through NMFS and estimated greater than 95% of the catch was from the Central Valley. They compared the allozyme results with a MSA and individual identification analysis using the microsatellite markers developed at the lab. The preliminary results were less than 1% of the experimental ocean fisheries were winter-run chinook from the Central Valley (Banks 1998).

The Winter-Run Chinook Captive Broodstock and Propagation Program began a year before the Central Valley Chinook Genetics Project. The goal is to maintain the genetic integrity of winter Chinook both in the Captive Broodstock, the Propagation Program, and in the wild.

Through the Winter-Run Chinook Captive Broodstock and Propagation Program Genetics Project, USFWS and BML repeated the Battle Creek trapping and "rapid response" genetic identification (described above) in 1998. BML streamlined the procedure and was able to report genetic results one day after receiving tissue samples, demonstrating again, genetic identification of chinook can be completed rapidly. USFWS restarted the artificial propagation program in 1998, after a two-year suspension. This year, BML will perform the preliminary individual identification analysis to identify winter-run chinook to minimize the possibility of hybridizing winter-run chinook with another run. in preparation for the potential use of gametes from the Winter-Run Captive Broodstock in the Propagation Program, BML is determining the parentage of all captive chinook available for spawning in 1998 (Rashbrook 1998).

Literature Cited

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5000 fish need processing of their code-wire-tags before the results of the fall run survival experiments are known.

Even with this doubled effort at Chipps Island, only 31 winter run sized chinook were captured during this period versus 46 winter-run sized chinook last year. Fall-run chinook catches, however, totaled 26,688 during this increased effort as compared to 2,575 captured last year during our regular sampling effort. Even taking the double effort into consideration, fall-run catches are much higher this year at Chipps Island. Delta smelt catch limited trawling in the final week of June, when one day of trawling was suspended as we reached our weekly limit.

Analysis of Existing Data on Shallow Water Fish Habitat

Mike Chotkowski

This study is designed to provide information about the use of shallow-water habitats by fish in the Sacramento-San Joaquin Estuary through analyses of existing data on fish collections made in shallow water. More than 10 such databases (collected by IEP agencies) exist, spanning periods of one to many years between 1959 and the present. The principal objectives of this study include (1) consolidating and formatting the available databases and constructing a descriptive database to serve as a key to records in the others; (2) constructing an inventory of fish species and life stages that use historically sampled shallow-water habitats, including timing of use; (3) summarizing shallow-water habitat types that have been sampled, and those that have not, for future use; (4) statistically analyzing fish databases, using relevant physical and other biological databases. Besides the summary database, an IEP technical report will be produced; peer-reviewed journal articles are also possible.

This study is being conducted by Mike Chotkowski (DFG), with work to date focused mainly on objectives (1) and (2). A steering committee has been formed to plan statistical analyses and will meet for the first time on 9 July 1998. Final products are due in 1999.

What's New on the Mitten Crab Front?

Tanya Veldhuizen, DWR, and Kathy Hieb, DFG

The Chinese mitten crab, *Eriocheir sinesis*, has rapidly increased its distribution in the San Francisco Estuary and watershed since it was first discovered in south San Francisco Bay in 1992. As of July 1998, the known distribution of the Chinese mitten crab extends north to Hunter's Creek (near Delevan National Wildlife Area) in the Sacramento River drainage and near Nicolaus in the Feather River, east to Roseville (Cirby Creek) and eastern San Joaquin County (Escalon-Bellota Weir on the Calaveras River and Littlejohns Creek near Farmington) and south to the San Luis National Wildlife Refuge near Gustine. We also have an unconfirmed report from the lower Stanislaus River. The mitten crab's distribution is also expanding in tributaries to San Pablo Bay, with sightings from all the major tributaries to Petaluma Creek and from a tributary to Sonoma Creek near Sonoma. It has been found throughout the Delta and South Bay tributaries.

Any crab found in fresh water is likely to be a mitten crab. The main identifying characteristic of the mitten crab is brown "hair" on the front claws (see figures below). Very small juveniles (<25 mm carapace width) rarely have "hairy" claws and may be confused with another non-native crab, the Harris mud crab (*Rithropanopeus harrisi*).

If you find a mitten crab beyond the current known range, please notify Kathy Hieb (khieb@delta.dfg.ca.gov) or Tanya Veldhuizen (tanyav@water.ca.gov) with the collection information (i.e., date, location, size, number, collection method, and contact person). You do not need to send us the crab.

Remember, it is illegal to import, transport, or possess live Chinese mitten crabs (Title 14 of the California Code of Regulations). Accidental release or escape will spread these crabs to uninfested waters. If you keep a mitten crab, it must be dead.